FIRE PROTECTION SPECIFICATIONS CONTINUED

FIRE PUMP

VERTICAL TURBINE FIRE PUMP

GENERAL

CONTRACTOR SHALL FURNISH AND INSTALL A QUANTITY OF 1 AURORA PUMP 5 STAGE, 11FGM-5 MODEL 500 GPM AT 100 PSI (UNDERWRITERS LABORATORIES LISTED) (UNDERWRITERS LABORATORIES OF CANADA LISTED) (FACTORY MUTUAL APPROVED) WATER LUBRICATED VERTICAL TURBINE FIRE PUMP(S). EACH UNIT SHALL INCLUDE A BOWL ASSEMBLY, STRAINER, COLUMN AND SHAFT, SURFACE DISCHARGE HEAD, VERTICAL HOLLOW SHAFT RIGHT ANGLE GEAR, GEAR TO ENGINE FLEXIBLE SHAFT WITH GUARD, AUTOMATIC AIR RELEASE VALVE, DISCHARGE PRESSURE GAUGE, AND DIESEL ENGINE WITH FUEL AND STARTING SYSTEMS AND AUTOMATIC ENGINE CONTROLLER.

CONDITIONS OF SERVICE

THE PUMP(S) SHALL BE RATED FOR 500 GPM AT 100 PSI AT THE DISCHARGE HEAD CENTERLINE. THE MAXIMUM LIFT BELOW

PUMP CONSTRUCTION

DISCHARGE HEAD

THE DISCHARGE HEAD SHALL BE CLASS 30 CAST IRON WITH A SEPARATE CAST IRON FOUNDATION PLATE, AND SHALL BE FURNISHED WITH A GREASE LUBRICATED PACKING BOX AND ANSI (125 LB.) (250 LB.) STANDARD DISCHARGE FLANGE. TO PREVENT DAMAGE TO THE SHAFT WHEN INSTALLING OR REMOVING THE MOTOR, A SEPARATE MOTOR SHAFT SHALL BE FURNISHED AND SHALL BE CONNECTED TO THE HEADSHAFT AT A POINT ABOVE THE PACKING BOX WITH A THREADED COUPLING. THE HEADSHAFT SHALL BE FURNISHED WITH A STAINLESS STEEL SLEEVE WHERE IT PASSES THROUGH THE PACKING BOX. THE DISCHARGE HEAD SHALL BE PROVIDED WITH A 3/4" NPT TAP FOR PACKING BOX DRAINAGE. THE DISCHARGE HEAD SHALL BE HYDROSTATICALLY TESTED 1-1/2 TIMES THE MAXIMUM WORKING PRESSURE BUT IN NO CASE LESS THAN 250 PSI

COLUMN PIPE

PUMP COLUMN PIPE SHALL BE FURNISHED IN SECTIONS NOT EXCEEDING 10 FEET IN LENGTH WITH STRAIGHT THREADS AND SLEEVE TYPE COUPLINGS. PIPE WEIGHTS SHALL BE NOT LESS THAN SPECIFIED IN NFPA #20.

LINESHAFT

OPEN, WATER LUBRICATED CONSTRUCTION SHALL BE USED WHERE THE DISTANCE FROM THE DISCHARGE HEAD TO THE STATIC WATER LEVEL DOES NOT EXCEED 50 FEET. LINESHAFT SHALL BE FURNISHED IN SECTIONS NOT EXCEEDING 10 FEET IN LENGTH. LINESHAFT SHALL BE SAE 1045 STEEL OF ADEQUATE SIZE TO TRANSMIT THE HORSEPOWER AND THRUST REQUIRED AND SHALL HAVE RENEWABLE SHAFT SLEEVES. THE LINESHAFT SHALL RUN IN NEOPRENE BEARINGS HOUSED IN BRONZE BEARING RETAINERS.

BOWL ASSEMBLY

THE PUMP BOWLS SHALL BE CLASS 30 CAST IRON WITH BRONZE BOWL WEARING RINGS, BRONZE ENCLOSED IMPELLERS AND STEEL IMPELLER LOCK COLLETS. THE PUMP SHAFT SHALL BE 416 STAINLESS STEEL SUPPORTED BY BRONZE BOWL BEARINGS. THE BOWL ASSEMBLY SHALL BE HYDROSTATICALLY TESTED TO 1-1/2 TIMES THE MAXIMUM WORKING PRESSURE BUT IN NO CASE LESS THAN 250 PSI. THE BOWL ASSEMBLY SHALL BE PERFORMANCE TESTED AND CERTIFIED PERFORMANCE CURVES SUPPLIED.

STRAINER

A BRONZE BASKET STRAINER WITH A FREE AREA OF AT LEAST 4 TIMES THE SUCTION AREA AND WITH OPENINGS TO RESTRICT THE PASSAGE OF A 1/2" SPHERE SHALL ALSO BE SUPPLIED.

GEAR

A VERTICAL HOLLOW SHAFT RIGHT ANGLE GEAR WITH A NON-REVERSE RATCHET SHALL BE FURNISHED TO MATCH THE MOUNTING DIMENSIONS OF THE DISCHARGE HEAD. THE GEAR SHALL HAVE ADEQUATE THRUST AND HORSEPOWER RATINGS TO TRANSMIT THE MAXIMUM THRUST AND HORSEPOWER REQUIRED BY THE PUMP.

ENGINE

DIESEL ENGINE(S) SHALL BE EQUAL TO CLARKE MODEL JU4H-UFAEE8 RATED 64 HP AT 1770 RPM AT 300 FEET ABOVE SEA LEVEL AND 77 DEGREES F AND SHALL BE (UNDERWRITERS LABORATORIES LISTED) (FACTORY MUTUAL APPROVED). EACH ENGINE SHALL BE PROVIDED WITH ELECTRIC STARTING EQUIPMENT AND A CHARGING ALTERNATOR. THE FACTORY SUPPLIED HEAT EXCHANGER PIPING LOOP COMPLETE WITH REQUIRED STRAINERS, A PRESSURE GAUGE, A PRESSURE REDUCING VALVE, AND A BYPASS LINE SHALL BE INSTALLED BETWEEN THE PUMP DISCHARGE HEAD AND THE ENGINE HEAT EXCHANGER BY THE INSTALLING CONTRACTOR. EACH ENGINE SHALL BE FURNISHED WITH LEAD-ACID STARTING BATTERIES, BATTERY RACK AND CABLES, A FLEXIBLE EXHAUST CONNECTOR AND INDUSTRIAL TYPE SILENCER. FURNISH EACH ENGINE WITH A JACKET WATER HEATER.

FLEXIBLE SHAFT

A FLEXIBLE SHAFT, WITH ENGINE AND GEAR FLANGES, SHALL BE FURNISHED TO CONNECT THE ENGINE TO THE GEAR. THE SHAFT SHALL BE ADEQUATELY SIZED TO TRANSMIT THE MAXIMUM PUMP BRAKE HORSEPOWER AT THE ENGINE SPEED WITH A MINIMUM BEARING LIFE OF 2500 HOURS. THE SHAFT SHALL BE PROTECTED BY A SHAFT GUARD.

CONTROLLER

THE DIESEL ENGINE CONTROLLER SHALL BE ARRANGED TO START THE FIRE PUMP MOTOR AUTOMATICALLY ON LOSS OF SYSTEM PRESSURE WITH (AUTOMATIC STOP) (MANUAL STOP). (FOR SPRINKLER OR STANDPIPE SYSTEMS WHERE AN AUTOMATICALLY CONTROLLED PUMPING UNIT CONSTITUTES THE SOLE SUPPLY, THE CONTROLLER SHALL BE WIRED FOR MANUAL SHUTDOWN. MANUAL SHUTDOWN SHALL ALSO BE PROVIDED WHERE REQUIRED BY THE AUTHORITY JURISDICTION.)

AN AUTOMATIC WEEKLY TEST TIMER SHALL ALSO BE STANDARD. THE CONTROLLER SHALL BE FURNISHED WITH A BUILT-IN BATTERY CHARGER CAPABLE OF RESTORING THE BATTERIES FROM A FULLY DISCHARGED CONDITION TO A FULLY CHARGED CONDITION WITHIN TWENTY-FOUR (24) HOURS.

FUEL SYSTEM

FURNISH AN ABOVE GROUND FUEL TANK WITH A CAPACITY EQUAL TO ONE GALLON PER HORSEPOWER PLUS 5% VOLUME FOR EXPANSION AND 5% VOLUME FOR SUMP. FURNISH THE TANK WITH AN INDICATING FUEL LEVEL GAUGE. PROVIDE FLEXIBLE FUEL LINE CONNECTORS AT THE ENGINE AND FUEL LINE CONNECTIONS AT THE FUEL TANK. (FUEL LINES TO BE PROVIDED BY THE INSTALLING CONTRACTOR.)

SUBMERSIBLE JOCKEY PUMP

THE JOCKEY PUMP SHALL BE AN AURORA PUMP MODEL B100025. THE PUMP SHALL BE RATED FOR 5 GPM @ 110 PSI. THE JOCKEY PUMP WILL BE CLOSE COUPLED TO A 1HP SUBMERSIBLE MOTOR. THE MOTOR WILL OPERATE ON THE AVAILABLE ELECTRICAL SUPPLY.

JOCKEY PUMP CONTROLLER

A FIRETROL MODEL FTA1100 JOCKEY PUMP CONTROLLER SHALL BE SUPPLIED. THE JOCKEY PUMP CONTROLLER SHALL COME COMPLETE WITH A FUSIBLE DISCONNECT, FRONT MOUNTED HAND-OFF-AUTO SELECTOR SWITCH, AND OVERLOAD RELAYS. THE CONTROLLER ENCLOSURE SHALL BE OF NEMA 2 TYPE. THE CONTROLLER SHALL HAVE ½" PRESSURE SENSING LINE RUN FROM THE DISCHARGE PIPING TO THE PRESSURE SWITCH.

ACCESSORIES

FURNISH EACH PUMP WITH THE FOLLOWING FITTINGS OR ACCESSORIES:

1. 3-1/2" DIAL DISCHARGE PRESSURE GAUGE.
2. MINIMUM 1-1/2" AUTOMATIC AIR AND VACUUM RELEASE VALVE.
3. MAIN RELIEF VALVE WITH CLOSED WASTE CONE.
4. DISCHARGE TEE WITH RELIEF VALVE ELBOW.
5. PRESSURE RECORDER AS REQUIRED BY FACTORY MUTUAL AND NFPA #20, COMMON TO ALL PUMPS.
6. HOSE VALVE MANIFOLD WITH A SET OF 2-1/2" HOSE VALVES, CAPS AND CHAINS, OR FLOWMETER COMMON TO ALL PUMPS.
7. WATER LEVEL TESTING DEVICE COMMON TO ALL PUMPS.

STANDARDS

ALL EQUIPMENT FURNISHED AND THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH NFPA #20 AND/OR (UL448) (ULC 448) (FACTORY MUTUAL APPROVED STANDARD #1312). PUMP(S) AND CONTROLLER(S) SHALL BEAR THE (UL) (ULC) (FM) MARK.

EXECUTION

PROVIDE ADDITIONAL OFFSETS, FITTINGS, VALVES, DRAINS, ETC. WHERE REQUIRED BY COORDINATION AND CONSTRUCTION CONDITIONS.

NO CLOSE NIPPLES, BUSHINGS, OR STREET ELBOWS PERMITTED.

RUN PIPING PARALLEL WITH OR AT RIGHT ANGLES TO WALLS AND OTHER PIPING, NEATLY SPACED WITH PLUMB VERTICAL PIPING.
PROVIDE SPRINKLERS BELOW ALL EXPOSED DUCTS, COMBINATIONS OF DUCTS OR OTHER OBSTRUCTIONS EXCEEDING 4 FEET IN WIDTH.

NO FIELD WELDING PERMITTED. SHOP WELDING SHALL BE PERFORMED ONLY BY CERTIFIED WELDERS.

TEST ALL UNDERGROUND AND INTERIOR PIPING IN ACCORDANCE WITH NFPA 13.

INSTALL SPRINKLER HEADS IN CEILING AREAS, CENTER OF TILE. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF SPRINKLER HEADS. ARCHITECT TO DETERMINE FINISHES.

INSTALL SPRINKLERS THROUGHOUT ALL AREAS INCLUDING COMBUSTIBLE CONCEALED SPACES AND IN ACCORDANCE WITH OBSTRUCTION REQUIREMENTS SET FORTH IN NFPA 13.

FACTORY PREFABRICATION AND TESTING

ALL OF THE ABOVE EQUIPMENT, (EXCEPT THE TEST HEADER, HOSE VALVES, AND MUFFLER) SHALL BE MOUNTED ON AN OPEN I-BEAM PERIMETER SKID. SKID TO BE FLUSH GROUTED TO TOP AT SITE. PIPES, PIPING COMPONENTS, AND THE PRESSURE SENSING LINES SHALL BE FIRMLY ANCHORED TO THE STEEL BASE BY MEANS OF STRUCTURAL STEEL SUPPORTS. ELECTRICAL WIRING BETWEEN DIESEL CONTROLLER AND ENGINE SHALL BE COMPLETED AT THE FACTORY IN RIGID METAL CONDUITS WITH TERMINATIONS IN FLEXIBLE METALLIC CONDUITS (ALL OTHER WIRING TO BE DONE IN EMT CONDUITS). ALL TAMPER SWITCHES TO BE WIRED IN EMT CONDUITS TO A COMMON JUNCTION BOX FOR CUSTOMER CONNECTION. JOCKEY PUMP AND MOTOR TO BE MOUNTED AND WIRED AT SITE BY OTHERS. FIRE PUMP TO BE SHIPPED LOOSE AND MOUNTED IN THE FIELD BY OTHERS. THE ENTIRE PIPING SYSTEM AND PUMP WILL BE INDIVIDUALLY HYDROSTATICALLY TESTED AT THE FACTORY PRIOR TO SHIPMENT. ADDITIONALLY, ALL EQUIPMENT WILL BE TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA, UL AND FM.

NO.	DATE	REVISION
1	06/03/2011	FIRE MARSHAL REVIEW
2	07/01/2011	OWNER REVIEW

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PROJECT

DEPARTMENT OF
PUBLIC WORKS
GARAGE SPRINKLERS

TITLE

SPECIFICATIONS - FIRE
PROTECTION

DRAWN BY:	AC	DRAWING
CHECKED BY:	KC	FP302
SCALE:	AS NOTED	
DATE:	07/07/11	